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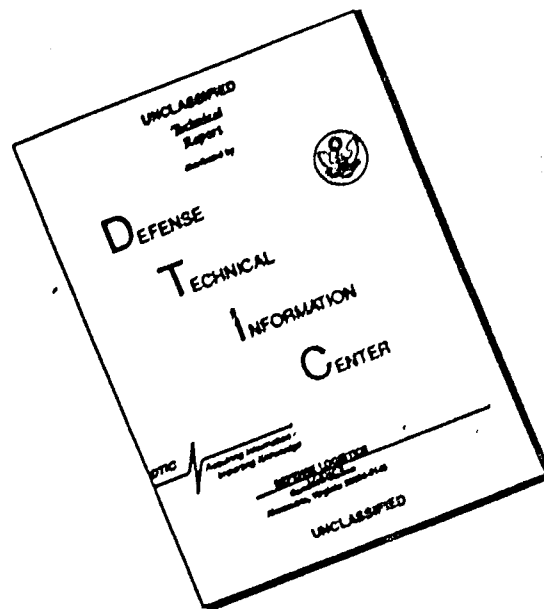
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HEADQUARTERS
20TH ENGINEER BATTALION (CBT)
APO US Forces 96240

EGDBB-CO

15 August 1966

SUBJECT: Operational Report on Lessons Learned for Period
1 May 1966 to 31 July 1966 (RCS [CSGPO-28(R-1)]
USFOR-65)

TO:

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1. SIGNIFICANT ORGANIZATION OR UNIT ACTIVITIES.

a. General:

The 20th Engineer Battalion (Combat) with the 584th Engineer Company (Light Equipment) and the 513th Engineer Company (Dump Truck) (minus) attached, continued construction of the Dong Ba Thin Military Complex. This project has continued to consume a high percentage of the battalion's effort during the reporting period. The scope of work will be examined in detail under the Operations section.

On 2 May 1966 the Headquarters and Headquarters Company closed into the new 900 Man Cantonment area (Engineer Base Camp) and Company C followed on 13 May 1966. This left Companies A and B still encamped in a temporary area three kilometers South of Dong Ba Thin.

For the period 23 May to 10 June, Company C was committed to up-grading Route HL-1 from Dien Khanh to the junction of Route QL-1 to a one-way, Class 31, dry-weather road, minimum width of eleven feet. The 553d Engineer Company (Float Bridge) was in support of this operation.

On 15 June 1966 the 20th Engineer Battalion (Cbt) was relieved from attachment to 35th Engineer Group (Construction) and was attached for all purposes to 45th Engineer Group (Construction) by General Order Number 40, Headquarters, 18th Engineer Brigade, APO San Francisco 96307, dated 16 June 1966.

Lieutenant Colonel Richard L. Harris, Battalion Commander, departed the command on 21 June 1966 to attend the National War College. Lieutenant Colonel Harris was Battalion Commander since October 1965. Major Harold M. Bowman, Battalion Executive Officer, assumed command until the arrival of Lieutenant Colonel Robert L. Gilmore who took command of the battalion on 13 July 1966.

Movement activity increased sharply in July. On 12 July one platoon of Company C was committed in support of the 572d Engineer Company (IE) in the vicinity of Vinh Hoa and on 13 July Company C (-)

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moved to the vicinity of Nha Trang to relieve the 39th Engineer Battalion (Cbt) of construction of the Republic of Korea Army Logistics Complex. One platoon of Company C remained at Dong Ba Thin to continue construction of a permanent bridge on Route QL-1.

On 19 July 1966, Company A moved to the vicinity of Ninh Hoa and relieved the 572d Engineer Company of the construction of the Republic of Korea Army Division Headquarters. At this time the platoon of Company C attached to the 572d Engineer Company returned to the control of Company C and relocated to the vicinity of Nha Trang.

The Battalion Headquarters and Headquarters Company and the 584th Engineer Company (LE) moved to the vicinity of Ninh Hoa on 29 July 1966. Company B remained in Dong Ba Thin along with the one platoon of Company C to continue work on projects in the Dong Ba Thin Military Complex. The 513th Engineer Company (DT) remained at Dong Ba Thin to support the construction effort and for anticipated future attachment to the 577th Engineer Battalion (Const) in early August 1966.

During July, the battalion hosted the 4th Engineer Battalion (Infantry Division) whose advance party arrived 12 July 1966. The 4th Engineer Battalion's main body was diverted to another area and its advance party departed Dong Ba Thin on 22 July 1966. The battalion also hosted the 577th Engineer Battalion (Const). Its advance party arrived on 14 July 1966 and the main body followed on 30 July 1966. The 577th Engineer Battalion assumed the construction mission in Dong Ba Thin as the 20th Engineer Battalion phased out.

27 SEP (b. Personnel:

The assigned strength of the 20th Engineer Battalion (Cbt) and attached units, the 584th Engineer Company (LE) and the 513th Engineer Company (DT (-) on 1 May 1966 was 851 officers and enlisted men. This represented a deficit of 18 below authorized strength. A more significant representation of personnel assets is the present for duty strength which takes into account those people in-transit (in and out), those on TDY, leave, or who for some reason are effectively lost to mission commitment. On the first day of the reporting period this figure was 768 officers and enlisted men. Most of the shortages were in the lower grades and constituted a considerable loss to the battalion construction capability. This shortage of personnel in the early portion of the reporting period coupled with the fact that many of the replacement personnel received did not hold engineer MOS's forced the battalion to operate an extensive OJT program.

The 584th Engineer Company (LE) experienced a rotational hump during the month of May with the loss of 31 enlisted men and four

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officers. This huge loss of experienced manpower during a one-month period had a serious impact on the operational capability of the company. Although replacements were quick to arrive, a high percentage of them were recent AIT graduates and inexperienced. As a result, the operational and maintenance capability of the company suffered until sufficient experience could be obtained from on-the-job training.

Significantly, commencing with the latter part of May the battalion and its attached units reached full authorized strength and eventually went from seven to ten percent over authorized strength. This is in accordance with announced policy of higher headquarters and provided much needed assistance to the command's construction capability, especially in view of the heavy workload experienced during the period.

Prior to 4 June 1966 the battalion had received no officer replacements direct from CONUS. This necessitated a number of reassignments within the battalion until the 35th Engineer Group (Const) re-assigned officers from other battalions and diverted incoming officers scheduled for other units to fill the shortages within the battalion and attached companies. On 4 June 1966 the first of three officer replacements to arrive in the battalion from CONUS reported for duty. As of the end of the reporting period, the 584th Engineer Company (LE) was again short two platoon leaders as a result of the loss of two officers to separation and to reassignment to higher headquarters. There are no known gains to replace these losses.

At the close of the reporting period the battalion's assigned strength was 937 officers and men of which 891 were present for duty.

The battalion has an active command orientation program. This consists of bi-monthly briefings to all newly assigned personnel and is given by the battalion information officer and the chaplain. These briefings include such topics as the US mission and aims in Vietnam, the particular mission of this engineer battalion, local customs and traditions, personal security, the chain of command and command relationships, curfews, moral and religious obligations of the individual, and numerous other areas of concern for new personnel in the Republic of Vietnam.

Disciplinary problems within the command have been minimal, involving 12 courts-martial during the period, of which six were summary courts. This is of particular significance in view of the heavy workload placed upon the individual and the close proximity to and transient nature of the indigenous civilians and villages.

During the months of May and July 1966, the 20th Engineer Battalion capped all other 18th Engineer Brigade units in the Soldier

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of the Month Competition. SP4 Jerry C. Goodman and PFC John T. Scott, both from Headquarters and Headquarters Company, were selected as 18th Engineer Brigade Soldier of the Month for May and July, respectively. This is indicative of the high morale and esprit de corps in the battalion which has existed since its arrival in Vietnam.

A more religious atmosphere was created in the battalion chapel by the construction of pews, an altar and chancel area. Cloth was locally purchased to make a dossal curtain and seasonal altar cloths. The lighting in the chapel was improved by the installation of fluorescent fixtures.

Roman Catholic coverage has been provided by the 10th Aviation Battalion while the 20th Engineer Battalion Chaplain continued to provide area Protestant coverage for this battalion and the 10th Aviation Battalion. Religious coverage for Jewish personnel remained grossly inadequate; services for Jewish personnel were conducted only once a month by the Jewish Chaplain from Nha Trang.

In the new battalion location near Ninh Hoa a new tent chapel is in the process of being constructed. The Battalion Chaplain is arranging Roman Catholic services with the Nha Trang Sub-Area Command and will provide inter-faith services until the services of a Catholic chaplain can be obtained.

c. Intelligence:

The combat intelligence requirements for the battalion remained negligible for May and June as it was still engaged in a construction role at Dong Ba Thin. Due to the relative security of the Dong Ba Thin area the battalion has remained divorced from the normal intelligence requirements of a combat engineer battalion.

An active intelligence program suited to the battalion's needs and circumstances at Dong Ba Thin had been developed. Emphasis was placed on identification and location of natural construction materials, particularly rock, sand and laterite. This was becoming critical as the existing resources in the Dong Ba Thin area were beginning to run low. In addition, continuous reconnaissance effort was devoted to the location of potential sources of fresh water in the area.

Area reconnaissance missions to determine suitability of locating base camps for incoming units were assigned to the battalion. These missions were further assigned to the combat companies of the battalion and will be discussed in detail under Operations.

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The two principal means the battalion utilized in obtaining combat intelligence have been the USARV Weekly Intelligence Summary and a weekly meeting of intelligence representatives of units and agencies of the City of Cam Ranh. The latter is a multi-national combined effort involving the Vietnamese Army, Special Sector, National Police, City, US Army, Navy, Air Force and ROK Marines intelligence personnel. This has been further supplemented by the establishment of a TOC at sub-sector headquarters in Ba Ngoi and the rapid dissemination of intelligence information daily. The battalion maintained liaison with intelligence officers and collection activities of the 10th Aviation Battalion and Detachment B-51 Special Forces located at Dong Ba Thin and sector advisors to the ARVN 23d Division located at Nha Trang, in an effort to keep better abreast of the enemy situation and to refine the intelligence information gathered.

All intelligence reports pertaining to the II Corps Tactical Zone (VN) have been extracted and collected in one location for ease of reference and review.

With the movement of the battalion into a more active area, the effort to gather and disseminate combat intelligence has increased. Daily visits to the MACV Subsector, Ninh Hoa, have been initiated to keep abreast of VC activity in the vicinity of the ROKA Division Headquarters area. This is supplemented with frequent contacts with the Korean company located at Ninh Hoa.

Weather information has been collected from Detachment 18, Weather Squadron (USAF) at Cam Ranh Air Base. Liaison was established early with this unit for 24 hour forecasts and severe weather warnings. Monthly climatic survey prepared by the 30th Weather Squadron (USAF) and published by USARV is also used. An effort is now being made to obtain weather forecasts from Nha Trang.

Alert, Defense and physical security plans have been tested, at least monthly, by the battalion. A new physical security plan was drawn up by the battalion in June to insure close integration with other units of the Dong Ba Thin area. This unit had also coordinated security plans with the Cam Ranh Air Base (USAF). The system of defensive wire and bunkers has been continually improved by the battalion in conjunction with its new physical security plan. As the period drew to a close, however, the battalion found itself in three different locations placing the burden of coordinating defense with the company commander. The latest physical security plan, drawn up in June, has taken this possibility into account and set up guidelines to be followed. Also, companies separated by a considerable distance from the battalion have been encouraged to make direct liaison with local authorities to keep abreast of the latest intelligence information for the area.

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d. Operations and Training:

(1) Dong Ba Thin Military Complex.

As indicated earlier, the majority of the construction effort of the battalion was expended on the Dong Ba Thin Military Complex. On 13 July 1966 when the battalion began to phase out of Dong Ba Thin, there were 12 current projects, including operation of sand and laterite pits. During the reporting period, work was completed on four projects in the complex which were turned over to the Installation Coordinator, Dong Ba Thin.

Since the entire Dong Ba Thin area had to be filled to raise it above anticipated flood levels, a large effort was expended in drainage, drainage studies and actual fill operations. The initial drainage plan which had been submitted on the area was approved by 18th Engineer Brigade and allowed the battalion to concentrate on the major drainage structures surrounding the Dong Ba Thin Complex during the month of July. To prevent the water from flowing into the Dong Ba Thin Complex from the higher land from the West, a 100 foot wide, three foot deep interceptor ditch was dug with a four foot high, 75 foot wide berm on the inside perimeter. The ditch is planned to catch the sheet flow and divert it to Cam Ranh Bay. Two 100 foot steel stringer bridges with reinforced concrete piers are being constructed on Route QL-1, one north of the Complex and one south, over the interceptor ditches. Presently, construction has been halted due to the lack of heavy timber decking material.

The inordinate amount of fill required for the area caused an alternate solution to the organic haul capability of the battalion to be sought. The majority of the work was accomplished using 5-ton dump trucks with a small contribution made with two 830-M tractors with 18 cubic yard scrapers belonging to the 584th Engineer Company (LE). A study concerning the feasibility of utilizing a 30 inch pipeline dredge was prepared and a request submitted. (See Quarterly Report for period ending 30 April 1966). A 25 inch dredge arrived on 13 May and remained with the battalion for 40 days. During the time the dredge was committed in support of the battalion it operated less than 200 hours due to poor cutting edges and slow replacements. Needless to say, little production was accomplished. The dredge was then diverted by higher headquarters to higher priority projects. Towards the end of June the existing sand-pit to the North of the Dong Ba Thin Complex began to run out. A new site was selected approximately 1,000 meters northwest on a low sand ridge. Since loading equipment was critical to the battalion due to a high deadline rate (see par 1.e.(2) below), a "chinaman" loading ramp was constructed. This greatly facilitated the handling and hauling of sand and released the limited loading equipment to other operations.

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In addition to the fill operations, construction in the Dong Ba Thin area consisted of PSP parking aprons and taxiways, concrete work and vertical construction. No significant problems were encountered in this area. Of the three special authorization concrete mixers that were requested in February, two arrived without skips on 9 July. Efforts have been made through higher headquarters to have them shipped from Saigon and promises of shipment in early August have been received.

In early May 1966 the operational control of the crusher operation previously operated by the 572d Light Equipment Company was transferred to this battalion. To increase productivity and insure a united effort, the quarry sections of both the 572d Light Equipment Company and the 584th Light Equipment Company were combined into one operation under the control of the 584th Light Equipment Company. This quarry operation provided adequate surfacing materials for all operations in the Dong Ba Thin Complex.

The 513th Engineer Company (Dump Truck) (-) continued, during the entire period, to support the haul operations. This dump truck augmentation was highly essential to fill operations at Dong Ba Thin.

The battalion has been involved in several other projects in the local area. All are listed at Inclosure 1, however a few are worthy of mention here:

The 1,100 foot MATC float bridge at My Ca was replaced with Class 60 bridge decking by Company B with support from the 553d Engineer Company (FB). This was accomplished in three days and two nights. The bridge was broken only at night to minimize the interruption of traffic. Difficulties were immediately encountered in putting the bridge together due to the shortage of a Class 60 bridge erection set. Efforts to offset this problem with home-made jacks and alignment tools were not as efficient as those found in the Class 60 erection set.

The battalion also worked on several projects for Republic of Korea Forces. The ROK Marine Headquarters at Dong Ba Thin, consisting of six quonsets, was completed on 4 May 1966. With the turn-over of Dong Ba Thin projects to the 577th Engineer Battalion (Const), the ROK Armed Forces Radio Station was at 90% completion, lacking only wiring which had not been available for several months.

(2) Reconnaissance and Combat Support Missions.

The battalion had several combat support missions, of which most were reconnaissance. They were:

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(a) Beach reconnaissance at Ba Ha and Cat Loi. During the period 12 and 13 May, elements of Company C conducted a reconnaissance of beach areas at Ba Ha and Cat Loi, to the North and South of Ninh Hoa, respectively. The purpose of the reconnaissance was to determine whether heavy equipment could be shipped into these beaches by LCM or similar craft, thereby by-passing Nha Trang. A team from the 497th Engineer Company (Port Construction) was employed to take soundings at each site to provide beach profiles. It was found that neither beach was suitable for landing craft of any type.

(b) HL-1 - Dien Khanh. On 23 May 1966 Company C moved to Dien Khanh (BP9455) to construct a by-pass around Nha Trang on Route HL-1 that would sustain one-way, Class 31 traffic. The bridge at Dien Khanh (720 feet) was redecked with M4T6 balk and stiffeners. Bridges along the route were also widened to a minimum of 11 feet and reinforced. This mission was accomplished on 9 June 1966 and the company returned to Dong Ba Thin on 10 June 1966.

(c) In early June the battalion was given the mission to conduct a reconnaissance of the Ban Me Thuot area to study the feasibility of cantonment areas in that vicinity for divisional size units. Company A conducted the reconnaissance during the period 17 to 23 June. An engineer study (S) was prepared and is on file for future reference.

(d) A reconnaissance was also conducted of the airfield at Nhon Co. This report is on file for future reference.

(3) 18th Engineer Brigade Directive 66-126DC-45.

During the last two weeks of July the battalion gradually assumed responsibility of 18th Engineer Brigade Directive 66-126DC-45, ROKA Logistics Complex and Division Area. To effectively accomplish this project, Company C (-) moved to the vicinity of Nha Trang on 13 July and relieved Company B, 39th Engineer Battalion (Cbt) in the construction of the ROKA Logistics Base. Company A moved to the vicinity of Ninh Hoa and relieved the 572d Engineer Company (LE) in the construction of the ROKA Division Area. At that time one platoon of Company C which had been committed in support of the 572d Engineer Company on 12 July returned to the company at Nha Trang. Company B continued work in the Dong Ba Thin area. The end of the reporting period found the battalion and attached units located as follows:

Headquarters and Headquarters Company - vic Ninh Hoa
Company A - vic Ninh Hoa
Company B - Dong Ba Thin
Company C - vic Nha Trang
One Platoon Company C - Dong Ba Thin
513th Engineer Company (DT) (-) - Dong Ba Thin
584th Engineer Company (LE) - vic Ninh Hoa

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(4) Training.

The battalion has continued its training program with the emphasis on individual and crew served weapons and combat engineer subjects. During the period, the battalion drew eight M79 grenade launchers and three 81mm mortars. These were broken down to the companies and training was begun immediately. The mortar capability is providing much needed indirect fire support for the battalion in its present isolated position.

A large percentage of replacements continue to arrive with non-engineer MOS. Therefore, the OJT program continues to receive a great deal of command emphasis.

(5) Miscellaneous.

The movement of this battalion revealed that when a unit, particularly an engineer unit, engages in construction activities, it accumulates a large amount of equipment and material over and above its TOE. The movement of this equipment and material requires careful planning and a rigid priority system must be used to insure arrival of first things first at destination.

In early June the battalion received its first shipments of Penepreme and conducted extensive tests with it. A total of 27 patches were poured varying the cutback and the type soil. Complete test results are on file.

e. Logistics.

(1) Labor: For the first two and one half months of the period, the battalion employed civilian labor sparingly; the battalion laundry and barber shop were staffed by indigenous personnel. However, with the assumption of project Bde 66-126DC-45 Companies A and C have employed approximately 550 and 400 AIK personnel, respectively, for clearing of land.

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(2) Maintenance: Maintenance for the battalion and attached units remained a critical problem. Operation on a 24 hour schedule places a heavy burden on the equipment and the battalion's maintenance capability. Loading equipment during this period of time became extremely critical and difficult to maintain due to the extensive number of hours operated. Front loaders in the 584th Engineer Company (LE) were virtually worn out after over 6,000 hours of operation. Although extensive efforts were made by both battalion and direct support maintenance facilities to repair these pieces of equipment, only two of the six authorized front loaders were operational at the end of July 1966.

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During late June and July, support given by the Direct Support Maintenance Facilities, Cam Ranh Bay, improved sharply after a period of about two months of little maintenance support. Although greatly improved, the support is still hindered by slow receipt of repair parts and a lack of maintenance float of major pieces of engineer equipment.

(3) Supply: During the reporting period 3,640 tons of supplies and materials were hauled by organizational transportation. The following quantities of major Class IV materials were placed on requisition in support of directed construction projects:

Cement	4,215 bags
Lumber	632,256 board feet
PSP	2,320 bundles
Nails	5,420 pounds
Burlap	438 rolls
Penepime	411 drums
Asphalt	700 drums
Culvert, CMP	1,340 linear feet

The battalion water point teams have operated in support of units detailed on outlying construction projects. Difficulty has been encountered in the re-supply of limestone, activated charcoal and chlorine powders used in water purification sets.

f. Medical.

The medical section continued its supervision of the sanitary facilities of the units assigned and attached to the 20th Engineer Battalion. Field sanitation teams of the units received continued close supervision as to their responsibilities and needed supplies. Inspections were made weekly by a medical aidman and once monthly by the battalion surgeon.

Outpatient and quarters status medical and surgical care have been provided the battalion and attached units. During the quarter there were 1,297 outpatient and 331 quarters visits. In addition, local nationals were treated on an emergency basis.

The quality of medical care available was significantly improved by the construction of a dispensary type building in the Dong Ba Thin cantonment. This was done entirely on a self help basis.

The immunization program is more closely supervised due to the environment of the Republic of Vietnam. To insure that all personnel receive the required immunizations, a suspense file is kept and lists of those requiring immunizations are prepared monthly for transmission to

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each unit. The overall percent immunizations up to date has never been less than 98%.

Medical aidmen have been provided the separate units as needed when they have been physically detached from the battalion headquarters.

g. Communications.

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The communications capability of the battalion has continued to be, at best, less than satisfactory. Although a continuous OJT program has been conducted on radio-telephone procedures, radio communications are still inadequate due to the old series radios being still on hand. AM series radios on hand in this battalion fail to meet prescribed distance checks and have proven to be extremely difficult to maintain.

In that the line companies of the battalion are more widely separated than in previous months, the requirement for reliable radios has become more critical. A request for the new series radios was forwarded to higher headquarters on 2 July 1966. As of the end of July, this battalion was still operating with inadequate communications.

Maintenance support from the 128th Signal Company in Cam Ranh Bay has continued to improve but at best is only temporary due to the constant use of the radios and the age of the sets.

With the battalion located in Ninh Hoa at the end of the reporting period, radio and messenger service were the only means of communications. A requirement for a VHF station exists to maintain land line communications with higher headquarters. This requirement should be met in early August by the installation of a VHF station at this location.

h. Civic Action.

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1 Medical and surgical outpatient care was continued for the population of Ba Ngoi on a weekly basis by the battalion medical section. Arrangements have been made to evacuate those patients requiring hospitalization to the Provincial Hospital in Nha Trang. 1,061 patients were examined and treated during the quarter. MEDCAP supplies were furnished by the MACV Advisory Team in Ba Ngoi. Due to the continued lack of supplies the MEDCAP program in the hamlet of Tan Thanh remained discontinued.

2 Authorization to request MEDCAP supplies was received on 13 July 1966 from MACV. As of 31 July no MEDCAP team number or account number had been received from the MACV ACofS, J-4.

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3 On 24 June 1966 a two-room, 60 pupil school house with adjacent playground was completed in the hamlet of Tan Thanh. Also, on 24 June 1966 a 36 foot by 76 foot dormitory was completed at the Loving Cross Orphanage in Lap Dinh. This project was a cooperative effort with the 135th Aviation Company. A 20 foot by 30 foot medical dispensary is presently under construction in the hamlet of Tan Thanh. Concrete blocks for the latter project were made with a machine provided by USAID. The vertical construction will be accomplished by the citizenry of Tan Thanh.

4 In cooperation with the Mayor of Cam Ranh open trash and garbage dumps were burned and covered with earth. Signs were made and placed at the trash dumps which stated in Vietnamese, Korean and English languages that dumping of trash and garbage is prohibited. Appeals were made to commanders to have their units utilize the sanitary fill provided for trash and garbage disposal.

5 The battalion has found that the best results in civic action projects occur when the projects are a cooperative effort of US Military personnel and the Vietnamese.

6 All civic action in the Dong Ba Thin area by this battalion was discontinued on 23 July 1966 due to the relocation of the battalion. However the Chaplain, as Civic Action Officer, has contacted the MACV Sub-sector Advisory in Ninh Hoa to establish a civic action program in the battalion's new area. Several tentative projects are under study and work should start soon.

1. Statement of General Progress. During the reporting period 1 May 1966 to 31 July 1966, the battalion completed nine projects at the location and for the using agency indicated:

- (1) CH-47 Parking Apron (282' x 900', M8 PSP)
Dong Ba Thin Military Complex
10th Aviation Battalion
- (2) CH-47 Maintenance Hardstands (282' x 400', M8 PSP)
Dong Ba Thin Military Complex
10th Aviation Battalion
- (3) UH-1B Maintenance Hardstands (60' x 300', M8 PSP)
Dong Ba Thin Military Complex
10th Aviation Battalion
- (4) Open Storage Hardstand (150' x 200', M8 PSP)
Dong Ba Thin Military Complex
10th Aviation Battalion

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- (5) Direct Support Maintenance Hardstand (500' x 300', M8 PSP)
Dong Ba Thin Military Complex
10th Aviation Battalion
- (6) Taxiway (3,000', M8 PSP)
Dong Ba Thin Military Complex
10th Aviation Battalion
- (7) Redecking My Ca Bridge (float bridge)
My Ca
553d Engineer Company (Float Bridge)
- (8) MUIWS Team Site
Nha Trang
US Navy
- (9) 33,000 square feet of vertical construction (standard
tropical buildings for mess halls, administration/
supply, latrines, showers, dispensaries, post exchanges,
chapel and arms rooms)
Dong Ba Thin Military Complex
10th Aviation Battalion

2. COMMANDER'S RECOMMENDATIONS AND OBSERVATIONS AND LESSONS LEARNED.

Part I. Observations.

a. Personnel: None.

b. Operations:

- (1) Item: Construction of tropicalized buildings.

Discussion: Prefabrication of rafters and panels for tropicalized buildings can increase the speed of erection. If care is not taken to insure that concrete pads are level and squared, difficulty will be encountered in the placement of prefabricated members.

Observation: Prefabrication of tropical buildings is recommended when constructing many buildings. Concrete floors must, however, be accurately formed and placed.

- (2) Item: Movement of unit impedimenta.

Discussion: Units which are engaged in construction and have remained in one location for any length of time accumulate a large amount of equipment over and above TOE.

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Observation: When a unit moves its base camp the operation must be conducted in stages. The TOE equipment plus the necessary Class IV material for barriers must be in the first echelon. The extra equipment, which may well be vital to long term operations, must follow in later echelons when the area is prepared to take it.

(3) Item: Saturated laterite is difficult to work and shape on roads.

Discussion: Loose laterite placed and spread will absorb water, become saturated and unworkable and takes a long time to dry out.

Observation: Insure proper grading of the base course. Thoroughly shape and compact laterite immediately after spreading to provide proper drainage.

(4) Item: Bulging PSP.

Discussion: PSP placed on slopes in excess of 3% has a tendency to slide downhill under heavy traffic. This causes bulges and rises at the joints.

Observation: Whenever PSP is placed on considerable slopes particular care should be taken to insure that all slack has been pulled out of it. Further, it should be anchored frequently to preclude sliding.

(5) Item: Grading next to PSP.

Discussion: In laying PSP every fourth row is extended, the end bent over and buried. Considerable difficulties have been encountered while grading the shoulder over the buried ends. Inexperienced operators have a tendency to tear the ends of PSP while grading the shoulder.

Observation: Grade parallel to the long edge of PSP (perpendicular to the shoulder) and away from the PSP. Allow the blade to ride lightly on the last foot of PSP and then depress it as it leaves the PSP. This produces excellent shoulders for drainage purposes and does not tear PSP.

c. Training and Organization:

(1) Item: Weapons familiarization.

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EGDBB-CO

15 August 1966

SUBJECT: Operational Report on Lessons Learned for Period
1 May 1966 to 31 July 1966 (RCS CSGPO-28(R-1))

Discussion: Engineer units engaged primarily in construction and operating in a secure area lose proficiency in individual and crew served weapons. As the degree of proficiency decreases, so does the individual's confidence. The battalion has implemented a training program that requires every man to range fire his weapon every six weeks. This frequent firing has prevented this loss of proficiency and confidence.

Observation: All combat support units engaged in non-combat support roles should make arrangements to fire all weapons at frequent intervals.

(2) Item: Operations NCO.

Discussion: When a combat engineer company is committed primarily to construction jobs it is necessary to have a competent E-6 or E-7 as operations NCO.

Observation: An E-6 or E-7 operations sergeant slot should be authorized for combat engineer companies.

d. Logistics:

(1) Item: Material Handling Equipment (MHE).

Discussion: Materials required for construction projects are normally received from the engineer supply point in bulk issue. The lack of a rough terrain fork lift has resulted in the loss of many man hours required to unload the items utilizing cranes and wreckers.

Observation: The augmentation of a rough terrain fork lift to an engineer battalion engaged in construction activities would greatly increase the efficiency of getting supplies from the supply point to the user.

(2) Item: Accounting for materials on construction projects.

Discussion: As the number and the scope of projects assigned to the battalion increased, the accountability of materials became more difficult.

Observation: The acquisition of visible index files on which materials and stock control figures could be recorded, greatly improved the accounting of materials.

(3) Item: Repair parts.

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15 August 1966

SUBJECT: Operational Report on Lessons Learned for Period
1 May 1966 to 31 July 1966 (RCS CSCFO-28(R-1))

Discussion: Over a period of constant equipment utilization, a large quantity of repair parts are consumed and through demand experience, a large quantity of repair parts are authorized for stockage. Repair parts personnel assigned by unit TOE are inadequate to provide for the proper operations of repair parts activities at the unit level.

Observation: Units must train additional repair parts personnel to provide for the adequate control and availability of repair parts.

(4) Item: Hydraulic cylinder gasket wear, 20 ton crane shovel, truck mounted.

Discussion: Hydraulic cylinder gaskets wear excessively permitting oil leakage.

Observation: Replacement gaskets made from old inner tubes have been used with good results. Original gaskets should be made to withstand greater stresses.

(5) Item: Replacement of engineer equipment.

Discussion: Engineer construction equipment is constantly operated on a two-shift basis resulting in excessively high hours of operation over a short period of time. Experience has shown that as the number of hours of operation increases, the deadline time proportionally increases until it reaches a point when the equipment is deadlined extensively due to worn out components.

Observation: Adequate field maintenance floats must be established to provide immediate replacements for worn out equipment.

(6) Item: Radio communications.

Discussion: As the end of the reporting period approached the battalion found itself with three line companies at three widely scattered locations. Presently the battalion has AN/VRC-10's as the primary radio in the FM command net. Engineer squads are equipped with AN/PRC-10's; the AM capability consists of one AN/GRC-19 per company. This unit has found that the AN/VRC-10 is inadequate to be used for the FM command net and the AN/PRC-10 is inadequate for nearly everything. The AN/GRC-19 has the required range but two are in field maintenance leaving two companies without AM capability.

Observation: All units should be issued the AN/VRC-12 series FM radios before deploying to RVN. Float stocks of AN/GRC-19's should be on hand pending issuance of the new FM radios.

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15 August 1966

SUBJECT: Operational Report on Lessons Learned for Period
1 May 1966 to 31 July 1966 (RCS CSGPO-28(R-1))

(7) Item: Generator requirements.

Discussion: The TOE of a combat engineer battalion does not authorize generators to adequately furnish power to the unit working 24 hours a day in a semi-permanent cantonment area.

Observation: All engineer units should be augmented with generators capable of providing continuous power required for refrigeration and other electrical needs. Heavy duty generators of 15 KW or larger capacity should be provided to each company size engineer unit.

(8) Item: Contaminated fuel.

Discussion: Fuel recently issued to units is of low grade and contains an excessive amount of water and other impurities. These impurities effect the performance of internal combustion engines. An excessive amount of replacement of damaged fuel injectors, carburetors and other components of engine fuel systems is required.

Observation: All fuel servicing equipment must have adequate filtering capabilities and they must be used. Engine fuel filters must be cleaned and/or replaced daily.

e. Medical:

(1) Item: GI soap can cause a contact Dermatitis.

Discussion: Because of the lack of a Quartermaster laundry support, the battalion has set up its own laundry utilizing indigenous labor. Recently the soap being used has been the very strong GI soap, FSN 7930-129-0801. Coincident with this a number of cases of contact dermatitis were seen in the men of the battalion.

Observation: When milder flake soap, FSN 8520-231-3006, was used, the condition appeared to subside. This soap should be used over the old variety.

(2) Item: Field Sanitation.

Discussion: Providing good sanitation for US Military cantonment areas presents a formidable challenge in Vietnam. Constant effort is required to create an island of good sanitation in a sea of filth and disease. Diarrheal and other digestive tract infections increase in proportion to the degree that good sanitation is compromised.

Observation: Instruction in sanitation should be given to all units as part of their POM. In addition, all individuals should receive refresher training in Vietnam.

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15 August 1966

SUBJECT: Operational Report on Lessons Learned for Period
1 May 1966 to 31 July 1966 (RCS CSGPO-28(R-1))

Part II. Recommendations.

1. Personnel: None

2. Operations: None

3. Training and Organization: This battalion is presently organized under TOE 5-35D. The new TOE for the Combat Engineer Battalion (Army) is the E series. Both TOE's have strong and weak points. It is recommended that Combat Engineer Battalions (Army) deploying to Vietnam be organized and equipped under the E series with the modifications indicated in In-closure 2. These modifications are based on eight months experience "in-country" and on observations by officers who have served in units organized under TOE 5-35E. These modifications are based on the assumption that the unit will operate from a semi-permanent base camp. The most important points of the E series and the attached modifications are:

a. Additional line company. TOE 5-35E authorizes four line companies per battalion. This gives each battalion an increased mission ability and more fully utilizes the staff. The capability of the staff and effective span of control of the commander is sufficient to handle the increase without difficulty. The addition of one company does not alter the need for various sections of a combat battalion to be augmented to handle large construction missions. Therefore, the addition of the one line company more effectively utilizes the critical personnel found in the battalion's command and staff element.

b. Increased loading capability. TOE 5-35E authorizes three cranes and 13 front loaders. This is an increase of one crane and ten front loaders. During the last quarter the critical item of equipment in fill operations was the battalion's loading capability. This determined the haul rate as the battalion's haul capability, with the 513th Engineer Company (DT) attached, exceeded its loading capability. The increase in loading equipment would alleviate this problem.

c. Communications equipment. Communications continue to be one of the battalion's major problem areas. Much of the problem can be traced to the inadequate FM command net. The receipt of the -12 series radios would alleviate this problem. This shortage of adequate FM radios was not critical when the battalion was engaged in construction in a secure, centralized location. However the battalion is now separated and construction is in areas considered insecure from hostile action. This condition has re-emphasized the importance of good, rapid communications. It is recommended that all engineer units that are engaged or may be committed in combat support missions or are involved in construction in insecure areas and are not authorized the new series radios be issued these radios as soon as possible.

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15 August 1966

SUBJECT: Operational Report on Lessons Learned for Period
1 May 1966 to 31 July 1966 (RCS CSGPO-28(R-1))

d. Operations Sergeant. With all companies engaged primarily in heavy construction missions, it is imperative that a company operations sergeant be utilized. All line companies and the attached 584th and 513th Engineer Companies utilize operations sergeants presently with a resultant increase in operational effectiveness.

e. Machine guns. TOE 5-35E authorizes one M60 machine gun, 7.62mm, per line platoon. Experience "in-country" by other units indicates that this is inadequate. The present TOE 5-35D is considered adequate and should be maintained. This TOE allows one .50 caliber machine gun and two 7.62mm machine guns per line platoon.

4. Intelligence: None

5. Logistics: None

6. Other: None

2 Incl
as

Robert L. Gilmore
ROBERT L. GILMORE
LTC, CE
Commanding

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- 1 - CINCUSARPAC, ATTN: GPOP-MH, APO 96558
- 3 - Deputy CG, USARV, ATTN: AVC-DH, APO 96307
- 25 - CG, 18th Engr Bde, ATTN: AVBC-C, APC 96307
- 10 - CO, 45th Engr Gp, ATTN: EGD-3, APO 96312

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EGD-3 (15 August 1966)

1st Ind

SUBJECT: Operational Report on Lessons Learned for Period 1 May 1966 to 31 July 1966 (RCS CSGPO-28(R&I))

HEADQUARTERS, 45th Engineer Group (Const), APO U.S. Forces 96312, 19 August 1966


THRU: Commanding General, 18th Engineer Brigade, APO U.S. Forces 96307
Commanding General, United States Army, Vietnam, ATTN: AVC
(History), APO U.S. Forces 96307
CINCUSARPAC, ATTN: GROF-MH, APO U.S. Forces 96558

TO: Department of the Army, Assistant Chief of Staff for Forces Development, Washington, D.C. 20315

1. During the reporting period, the 20th Engr Bn devoted 80% of its effort to military construction projects and only 20% to combat support. This heavy construction load, necessitated by urgent requirements for logistics support facilities, placed heavy demands on the personnel and equipment of this Combat Engineer Battalion and required that the battalion be augmented with additional vertical construction equipment and the support of a Light Equipment Company. Although a Combat Engineer Construction Battalion, when properly augmented, can approach the productivity of a Construction Battalion, because of MOS and TOE differences between Construction and Combat Battalion and the basic mental orientation of their personnel, the use of Combat Battalions for semi-permanent construction involves certain inefficiencies that must be recognized and accepted.

2. The heavy use of engineer equipment in a theater of operations, brings with it a drastic jump in the equipment deadline rate. 20th Engr Bn came to Vietnam with old equipment and the use of this equipment in an environment of sand and dust almost doubled the expected deadline rate. In addition Combat Support requirements call for the use of engineer equipment in unusually rough terrain and place on the equipment over-capacity loads. Consideration should certainly be given, in preparing units for overseas movement, to outfitting them with new equipment.

3. I concur with the Battalion Commander's recommendations that the D Series TOE Combat Battalions be reorganized immediately under the E Series TOE.


GEORGE H. BUSH
Lt Col, CE
Commanding

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AVBC-CG (15 Aug 66)

2d Ind

SUBJECT: Operational Report-Lessons Learned for Period 1 May to 31 July 1966 (RCS CSFOR-65)

HEADQUARTERS, 18TH ENGINEER BRIGADE, APO 96307, 14 September 1966

THRU: Commanding General, United States Army, Vietnam, ATTN: AVC-DH
APO 96307

CINCUSARPAC, ATTN: GROF-MH, APO 96558

TO: Department of the Army, Assistant Chief of Staff for Force Development (ACSFOR-DA), Washington, D. C. 20315

This Headquarters concurs with the report of 20th Engr Bn (Cbt) and 1st Ind, subject to the following comments:

a. Section 1, Significant Organization or Unit Activities.

(1) Para 1b. (a) Massive rotation of personnel during a brief period of time is recognized as a problem. This problem is common throughout the Brigade and studies are being conducted to determine the most feasible method to lessen the impact on units concerned.

(b) The policy of briefing newly arrived personnel is of great benefit to the chapel program. It insures that all are immediately acquainted with the religious program.

(c) Area coverage by Chaplains is a necessity if units not authorized Chaplains are to receive adequate religious coverage. Chaplains must constantly be aware of units in their immediate area to insure that they have adequate Chaplain coverage.

(2) Para 1e(2). Loading equipment and maintenance float problems are due to a shortage of repair parts. The Director of Maintenance, Cam Ranh Bay was made aware of situation and further coordination is being conducted with 1st Logistical Command.

(3) Para 1g. Concur with battalion's comments. The new series FM radios for this unit have arrived and will be issued in about two (2) weeks. The VHF system to the battalion was scheduled to be installed on 12 August.

b. Section 2, Part I, Observation (Lessons Learned).

(1) Para 2c(2). There appears to be a definite requirement for an operations NCO in a combat company committed to construction operations. This request is being considered in MTOE's being developed by this Headquarters.

(2) Para 2d(1). A rough terrain forklift is required for materials handling. This request is being considered in MTOE's being developed by this Headquarters.

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2d Ind

14 September 1966

SUBJECT: Operational Report-Lessons Learned for Period 1 May to 31
July 1966 (RCS CSFOR-65)

(3) Para 2d(3). Personnel (repair parts) are insufficient on TO&E to handle a 24 hour operation. Training of organic personnel is the only solution until the TO&E can be changed.

(4) Para 2d(5). The shortage of repair parts has precluded the availability of an adequate maintenance float.

c. Section 2, Part II, Recommendations.

Para 3 and Incl 2 to the report.

(1) Studies have been completed by this Headquarters and recommended reorganization of several units in the brigade organization has been made, among which TOE 5-35E is included.

(2) Proposed modifications to TOE's were considered in the studies, indicated above, but not considered appropriate to recommend at this time.

(3) Pending receipt of authority to reorganize the combat battalions, in the brigade organization, to the E series, a study of possible modifications in personnel and equipment will then be undertaken and this battalion's proposed modifications will be incorporated in all unit's proposals received at that time.



R. R. PLOGER
Brigadier General, USA
Commanding

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AVHGC-DH (15 August 1966) 3d Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 July 1966 (RCS CSFOR-65)

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96307 27 OCT '66

TO: Commander-in-Chief, United States Army, Pacific, ATTN: GPOP-OT
APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned from the 20th Engineer Battalion (Combat) as indorsed and adds the following comments.

2. Reference Section I, Paragraph 1e(2), Page 9 and 2d Indorsement, Paragraph a(2): Lack of repair parts has contributed to an inadequate maintenance float. Augmentations to combat battalions have also reduced the major end items in the float stocks. Until the supply of repair parts and end items builds up against the increased authorizations the shortage will continue.

3. Reference Section I, Paragraph 1h, Page 11, Lack of Supplies for MEDCAP Program: MEDCAP (Medical Civic Action Program) supplies are in short supply. \$2,588,000 worth of these supplies are on requisition. Of this figure \$1,560,00 are overdue. The recent change which provides that MEDCAP supplies will come from Okinawa instead of CONUS sources will speed up their receipt in RVN. The 20th Engineer Battalion received a MEDCAP account number from MACV J4 on or about 19 August 1966.

4. Reference Section II, Part I, Paragraph 2d(5), Page 16 and 2d Indorsement, Paragraph b(4): Nonconcur. Replacement of worn out components in equipment are not made from maintenance float but through normal supply channels. If the Prescribed Load List is properly used, demand can be established at depots and requisitions filled more quickly. Experience will show the average life of components. Therefore requisitions may be submitted far enough in advance of failure that the new part will be present at the time of failure. This will preclude lengthy deadline time of equipment awaiting parts.

5. Reference Section II, Part II, Recommendation and 2d Indorsement, Paragraph c(3): MTOE's (Modified Tables of Organization and Equipment) documents for the 18th Engineer Brigade were forwarded to USARPAC on 6 October 1966.

FOR THE COMMANDER:


W. R. AUTRY
1st Lt, AGC
Asst Adjutant General

2 Incl
nc

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AVHGC-DH (15 August 1966) 3d Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 July 1966 (RCS CSFOR-65)

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96307 27 OCT '66

TO: Commander-in-Chief, United States Army, Pacific, ATTN: GPDP-OT
APO 96558

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FOR THE COMMANDER:


W. R. AUTRY
1st Lt, AGC
Asst Adjutant General

2 Incl
nc

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GP-OP-OT(15 Aug 66)

4th Ind

SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 July 1966 (RCS CSFOR-65)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 25 NOV 1966

TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington, D. C. 20310

This headquarters concurs in the basic report as indorsed.

FOR THE COMMANDER IN CHIEF:



L. L. CHAPPELL
MAJ, AGC
Asst AG

2 Incl
nc

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CPOP-OT(15 Aug 66)

4th Ind

**SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 July 1966 (ACS CSFOR-65)**

HQ, US ARMY, PACIFIC, APO San Francisco 96358 25 NOV 1966

**TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington, D. C. 20310**

This headquarters concurs in the basic report as indorsed.

FOR THE COMMANDER IN CHIEF:

**2 Incl
nc**

**L. L. CHAPPELL
MAJ, AGC
Asst AG**

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20TH ENGINEER BATTALION (COMBAT)

RECAPITULATION OF ENGINEER EFFORT - 1 MAY TO 31 JULY 1966

	Project									
	Bde 65-14DC-45 UH-1B Helipads & Maintenance Area	Bde 65-16DC-45 UH-47 Helipad & CH-47, CV-2 Maint	Bde 65-47DC-35 Admin Bldgs	Bde 65-61DC-45 Warehouse Depot and PSP	Bde 65-68DC-45 Warehouse (DS) and PSP	Bde 66-14DC-45 Airfield Extension and Taxiway	Bde 66-116DC-45 Hangars and PSP DS Area	Bde 66-131DC-45 500 Man Cantonment and Rte Q1-1 Bridges		
Man Hours	16,031	54,197	10	1,874	5,243	11,055	6,279	144,744		
US Troops	16,031	54,197	10	1,874	5,243	11,055	6,279	144,744		
Indigenous										
Equipment Hours	11,767	31,866	10	924	3,613	3,725	3,044	35,800		
Tons of Fill	58,422	136,542		18,766	24,098	4,150	1,778	151,349		
Yards of Concrete						5		926		
Acres Cleared	6	22	3		5	6	14	224		
Miles of Roads										
Feet of Runway										
Vertical Const (sq ft)										
Laterite Placed (tons)	2,350	40,506			1,946	15,865	5,453	32,733		
PSP Placed (sq ft)	30,000	252,918			30,000	71,050	150,000	16,545		
Taxiway (lin ft)		180				292				

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20TH ENGINEER BATTALION (COMBAT)

RECAPITULATION OF ENGINEER EFFORT - 1 MAY TO 31 JULY 1966

Project

	Bn 66-29 Dredge Support	SUB TOTAL DONG BA THIN	Bde 65-37DC-35 ROK Marine Bde Headquarters	Bde 66-22DC-45 ROK Armed Forces Radio Station	Bde 66-126DC-45 ROKA Log Base & Division Complex	SUB TOTAL KOREAN SUPPORT	Mt Ca Bridge	Route Maint Route QL-1
Man Hours	3,034	212,652	214	1,005	72,675	73,985	5,187	3,956
US Troops	3,034	212,152	214	1,096	22,835	24,145	5,187	3,956
Indigenous					49,840	49,840		
Equipment Hours	97	92,726	3	101	7,451	7,555	51	3,587
Tons of Fill	6,166	411,211						
Yards of Concrete		931	60					
Acres Cleared		285			99	99		
Miles of Roads		2.4			2.9	2.9		
Feet of Runway								
Vertical Const (sq ft)		32,733	960			960		
Laterite Placed (tons)		82,665			6,059	6,059		94
PSP Placed (sq ft)		533,968						
Taxiway (lin ft)		472						

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20TH ENGINEER BATTALION (COMBAT)

RECAPITULATION OF ENGINEER EFFORT - 1 MAY TO 31 JULY 1966

Project

	Route Maint My Ca Road	Route Recon Phan Rang to Ngan Ha	SUB TOTAL ROUTE & BRIDGE	Mo 66-155C-45 MOTMS Team Site	Bn Projects	Cyclic Action	TOTAL	COMBAT SUPPORT
Man Hours	156	120	9,419	144	3,275	1,597	331,073	87,182
US Troops	156	120	9,419	144	3,275	1,597	281,233	87,482
Indigenous							49,840	
Equipment Hours	156	30	4,286	96	580	353	105,596	21,160
Tons of Fill							411,271	
Yards of Concrete							931	
Acres Cleared							384	
Miles of Roads							2.9	
Feet of Runway								
Vertical Const (sq ft)							33,693	
Laterite Placed (tons)			94				89,268	
PSP Placed (sq ft)							533,968	
Taxiway (lin ft)							472	

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PERSONNEL AND EQUIPMENT AUGMENTATION, TOE 5-36E

1. Recommend all units deploying to RVN be organized under the Echo series TOE. The following recommendations are submitted as feeder information on personnel and equipment augmentation of TOE 5-36E:

a. Personnel:

TOE	PARA	LINE	DESCRIPTION	GRADE	MOS	BR	AUTH	REQ'D
5-36E	01	13	Radio TP Op	E-3	120.00		0	1
5-36E	02	13	Motor Sgt	E-6	631.60	NC	0	1
5-36E	03	14	Mail Delivery Clerk	E-3	710.00		1	Delete
5-36E	03	15	Mail Delivery Clerk	E-4	710.10		0	1
5-36E	04	02	EN Recon Sgt	E-6	123.60	NC	3	2
5-36E	04	02	EN Recon Sgt	E-7	123.70	NC	0	1
5-36E	05	08	Cors Draftsman	E-5	811.10		0	1
5-36E	05	11	Rodman Tapeman	E-4	820.10		0	1
5-36E	10	05	Ambulance Driver	E-4	911.10		1	2
5-36E	10	07	General Clerk	E-3	710.00		1	Delete
5-36E	10	08	Clerk Typist	E-4	711.70		0	1
5-36E	09	10	Lt Veh Driver	E-3	620.00		2	3

b. Equipment:

TOE	PARA	LINE	DESCRIPTION	AUTH	REQ'D
5-36E	02	401095	Bayonet knife, w/scabbard for M16 rifle	15	16
5-36E	02	420670	Grenade Launcher, 40mm	0	1
5-36E	02	422585	Machine gun, light, flexible	0	2
5-36E	02	425565	Mount, tripod, machine gun, 7.62mm	0	2
5-36E	02	435965	Rifle, 7.62mm, semi-automatic, light barrel	14	10
5-36E	03	457110	Trailer, amphibious, 1/4 ton, 2 wheel	3	4
5-36E	03	461790	Truck, utility, 1/4 ton, 4 x 4	3	4
5-36E	03	522971	Duplicating machine, stencil process bench, hand operated, 7 1/4" w, 14" lg	0	2
5-36E	03	529100	Goggles, sun, wind, dust, plast coat, neutral grey	5	6
5-36E	03	554125	Safe, 2 shelves, 1 drawer, 2 compartments, 26" h, 17" w, 17" d	1	2
5-36E	03	565875	Tent, GP Med, w/o windows, FM WWR, complete with pins and poles	1	3
5-36E	03	575870	Typewriter, non ptbl, 13 in paper size, 42 to 44 keys, elite type	4	5
5-36E	03	575970	Typewriter, ptbl, upper and lower case shifts, elite type, 42 keys	1	Delete

Incl 2

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<u>TOE</u>	<u>PARA</u>	<u>LINE</u>	<u>DESCRIPTION</u>	<u>AUTH</u>	<u>REQ'D</u>
5-36E	04	457110	Trailer, amphibious, cargo, $\frac{1}{4}$ ton, 2 wheel	0	1
5-36E	04	461790	Truck, utility, $\frac{1}{4}$ ton, 4 x 4	0	1
5-36E	04	642004	Radio set, AN/GRC-106, mtd in trk, utility, $\frac{1}{4}$ ton 4 x 4	0	1
5-36E	05	213497	Burner assembly, space heater	1	Delete
5-36E	05	239638	Heater, space, coal or oil, 45,000 BTU 18-5/8" h	1	Delete
5-36E	05	401095	Bayonet knife, w/scabbard, for 7.62mm rifle	11	12
5-36E	05	435965	Rifle, 7.62mm, semi-automatic, light barrel	8	9
5-36E	05	655201	Radio set, AN/VRC-47, mtd in 2 $\frac{1}{2}$ ton trk for TOC	0	1
5-36E	06	UNK	Fork lift, rough terrain, 10,000 lb	0	1
5-36E	07	655201	Radio set, AN/VRC-46 mtd in trk, $\frac{1}{4}$ ton 4 x 4	0	1
5-36E	07	655204	Radio set, AN/VRC-46, mtd in trk, 3/4 ton, cargo, 4 x 4	1	Delete
5-36E	07	655704	Radio set, AN/VRC-47 mtd in trk, 3/4 ton, cargo, 4 x 4	0	2
5-36E	09	643401	Radio set, AN/GRC-125, mtd in trk, utility, $\frac{1}{4}$ ton, 4 x 4	0	1
5-36E	09	461790	Truck, utility, $\frac{1}{4}$ ton, 4 x 4	0	1
5-36E	09	401095	Bayonet knife, w/scabbard, for 7.62mm rifle	29	30
5-36E	09	435965	Rifle, 7.62mm, semi-automatic, light barrel	29	30
5-36E	10	UNK	Ambulance, $\frac{1}{4}$ ton	0	1
5-36E	10	UNK	Ambulance, 3/4 ton	0	1
5-36E	10	460110	Truck, cargo, 2 $\frac{1}{2}$ ton, 6 x 6 LWB	0	1
5-36E	10	457220	Trailer, cargo, 1 $\frac{1}{2}$ ton, 2 wheel	0	1
5-36E	10	235134	Generator set, gas engine, 5KW, 60 cy 1 & 3 PH, 4 wire connectable to 2 wire and 3 wire AC 120, 120/240, 120/208V, air cooled, skid mtd	0	1
5-36E	10	565850	Tent, general purpose, large, cotton duck, FM WWR, OD, complete with pins and poles	0	1
5-36E	10	566025	Tent liner, cotton, oxford, tent GP lg	0	1
5-36E	10	565901	Tent, GP, small, cotton duck, FM WWR OD, with pins and poles	0	1
5-36E	10	562161	Table, folding legs, wood top and legs, 36" lg, 24" w, 27-25/32" h	0	3
5-36E	10	UNK	Chair, folding	0	6
5-36E	10	401095	Bayonet knife, w/scabbard, for 7.62mm rifle	0	16

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<u>TOE</u>	<u>PARA</u>	<u>LINE</u>	<u>DESCRIPTION</u>	<u>AUTH</u>	<u>REQ'D</u>
5-36E	10	429280	Pistol, automatic, cal .45	0	1
5-36E	10	435965	Rifle, semi-automatic, 7.62mm, light barrel	10	15
5-36E	10	UNK	Autoclave	0	1
5-36E	10	UNK	Microscope with light	0	1
5-36E	10	UNK	Centrifuge	0	1
5-36E	10	UNK	Refrigerator, 10 cu ft	0	1

2. Recommend that the 5-36E augmentation paragraph 11, line item 108050-711740, be issued to units deploying to RVN. Recommend GSA approved document container model number SF-CE, Mosler Safe Company, one 65 cu ft refrigerator, one ice machine, one 45 KW generator and six GP CP medium tents to house personnel be issued to units deploying to RVN.

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PERSONNEL AND EQUIPMENT AUGMENTATION, TOE 5-37E

Recommend all units deploying to RVN be organized under the Echo series TOE. The following recommendations are submitted as feeder information on personnel and equipment augmentation of TOE 5-37E:

a. Personnel:

TOE	PARA	LINE	DESCRIPTION	GRADE	MOS	BR	AUTH	REQ'D
5-37E	01	07	Motor Sgt	E-5	631.60	NC	1	Delete
5-37E	01	07	Motor Sgt	E-6	631.70	NC	0	1
5-37E	01	08	First Cook	E-5	941.10		2	3
5-37E	01		Operations Sgt	E-7	121.70	NC	0	1
5-37E	01		Engr Supply Spec	E-4	762.10		0	1
5-37E	02	07	Tool Room Keeper	E-3	120.00		3	Delete
5-37E	02	07	Tool Room Keeper	E-4	121.10		0	3

b. Equipment:

TOE	PARA	LINE	DESCRIPTION	AUTH	REQ'D
5-37E	01		Generator set, gas engine, 30 KW	0	1
5-37E	01	213497	Burner assembly, space heater	2	Delete
5-37E	01	239638	Heater, space, coal or oil, 45, 18-5/8" H	2	Delete
5-37E	01	401095	Bayonet knife, w/scabbard, for 7.62mm rifle	36	40
5-37E	01	435965	Rifle, 7.62mm, semi-automatic	35	39
5-37E	01	457110	Trailer, amphibious, cargo, 1/4 ton, 2 wheel	1	2
5-37E	01	457190	Trailer, cargo, 3/4 ton, 2 wheel	1	2
5-37E	460050		Truck, cargo, 3/4 ton, 4 x 4	1	2
5-37E	01	461790	Truck, utility, 1/4 ton, 4 x 4	1	2
5-37E	01	519800	Dispensing pump, hand driven, continuous flow, 12 gal per 100 rev	1	2
5-37E	01	540029	Lantern, Coleman	0	4
5-37E	01	655201	Radio set, AN/VRC-46, mtd in 1/4 ton trk	0	1
5-37E	01		Refrigerator, 65 cu ft	0	1
5-37E	01		Ice machine	0	1
5-37E	01	565875	Tent, GP Med w/o windows, FM WWR, complete with pins and poles	1	3
5-37E	01	575901	Typewriter, non ptbl, 15" paper size, 42 to 44 keys, elite type	0	1
5-37E	01	575970	Typewriter, ptbl, upper and lower case elite type, 42 keys	1	Delete
5-37E	02	417125	Gun, machine, 7.62mm, lightweight, gen purpose	1	Delete

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<u>TOE</u>	<u>PARA</u>	<u>LINE</u>	<u>DESCRIPTION</u>	<u>AUTH</u>	<u>REQ'D</u>
5-37E	02	565875	Tent, GP Mod w/o windows, FM WWR, complete with pins and poles	0	6
5-37E	02	540029	Lantern, Coleman	0	6
5-37E	03	417125	Gun, machine, 7.62mm, lightweight, gen purpose	0	9

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